From UCLA Physics & Astronomy Department

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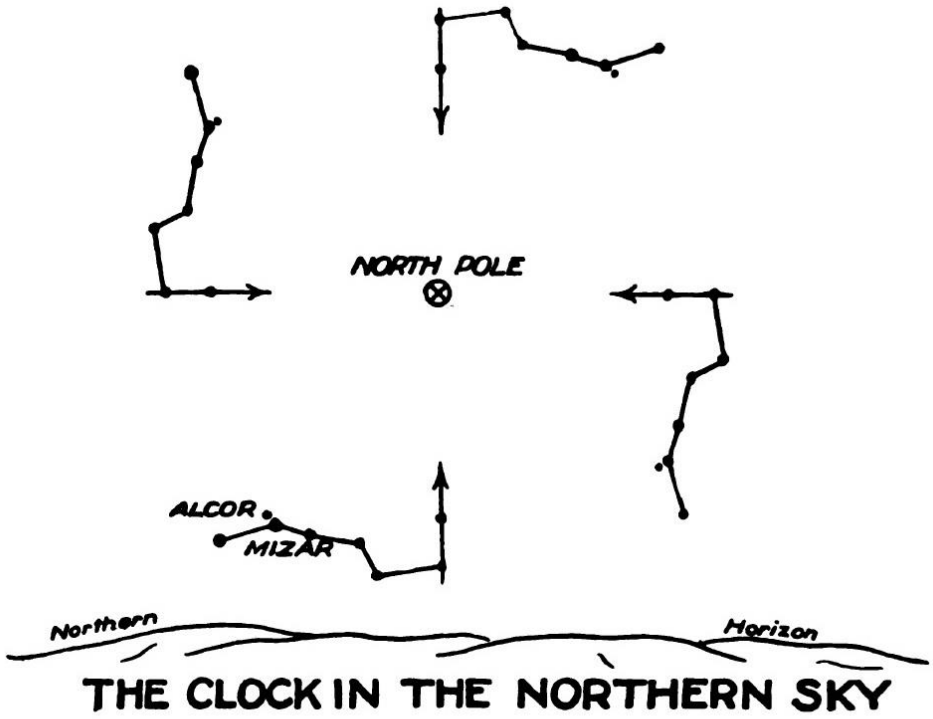
Find the Big Dipper and the North Star.

Telling Time by the Big Dipper

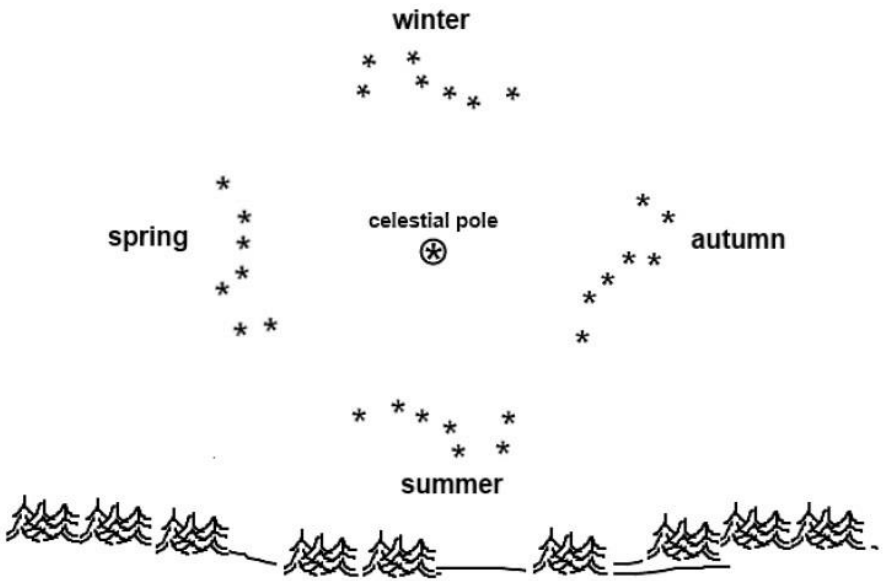
Adapted by The Woodsman's Journal Online



From Astronomy, by Arthur M. Harding, 1935, p 208

How To
Find the Big Dipper and the North Star.
Telling Time by the Big Dipper

Everyone knows that experienced woodsmen and woodswomen can tell time by the stars, but have you ever met anybody that could!? Here's how.



In the spring the Big Dipper will rise upside down directly over the north star, Polaris, and before set to the west of the star; in the summer it will rise west of the star and then set below the star; in the autumn it will rise directly under the star, before setting to the east of the star; and in the winter it will rise to the east of the star and then set upside down directly over the star.

From “The Bear and the Year: On the Origin of the Finnish Late Iron Age Folk Calendar and its Connection to the Bear Cult” by Marianna P. Ridderstad

NOTES:

FIND THE BIG DIPPER AND THE NORTH STAR

The ability to find the North Star (Polaris) is useful for finding your way at night and for orienting yourself to constellations in the night sky.

Start from a location shielded from bright lights with a clear northern horizon. Initially, use a magnetic compass or a map to determine the north direction. Note that a magnetic compass points about 14 degrees east of north at Los Angeles.

Once you have determined the north direction, look up about one third* of the way from horizon to zenith, the top of the sky. The North Star is fairly bright (second magnitude) and visible from the city, but not as bright as the brightest stars (first magnitude).

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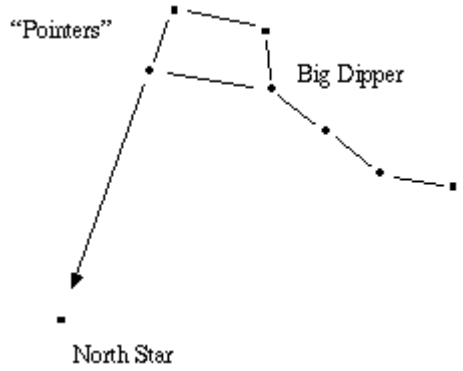
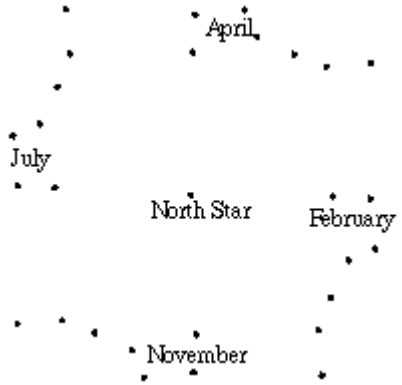
*The height of the North Star above the true horizon is equal to the latitude of the location, or about 34 degrees for Los Angeles.

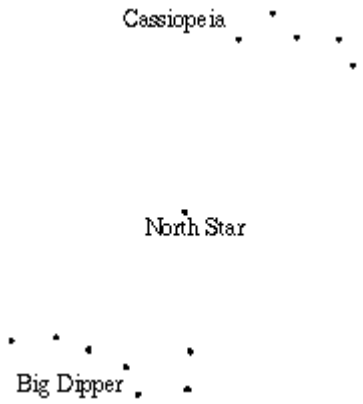
The Big Dipper rotates around the North Star through the night and through the seasons. Its stars are the same brightness as the North Star. The last two stars of the Dipper are called the "Pointers". A line from them passes near the North Star.



Once you have gotten familiar with the shape of the Big Dipper, you can usually locate it quickly and use it to find the North Star. The position of the Dipper around the North Star depends on the time of night and the month of the year. A rotating star chart can give you this information, or use the diagram below, which shows the position of the bowl of the Dipper in early evening according to the month.



In the fall season it is more difficult to see the Dipper from a location as far south as Los Angeles. Some of its stars are likely to be lost in the horizon's mists. Then, the "W" of Cassiopeia may help to orient you towards the North Star.



The North Star is the last star in the handle of the Little Dipper.

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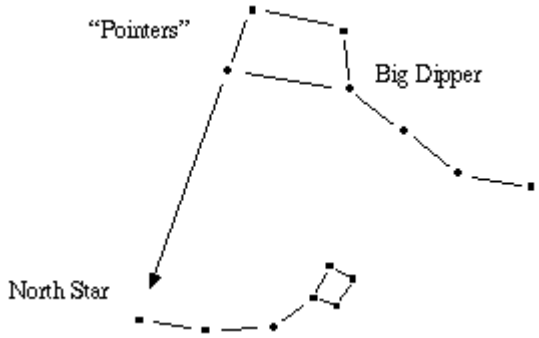
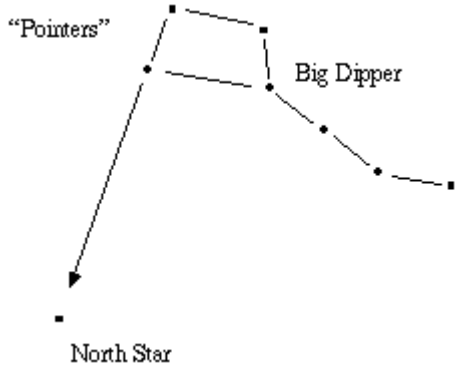


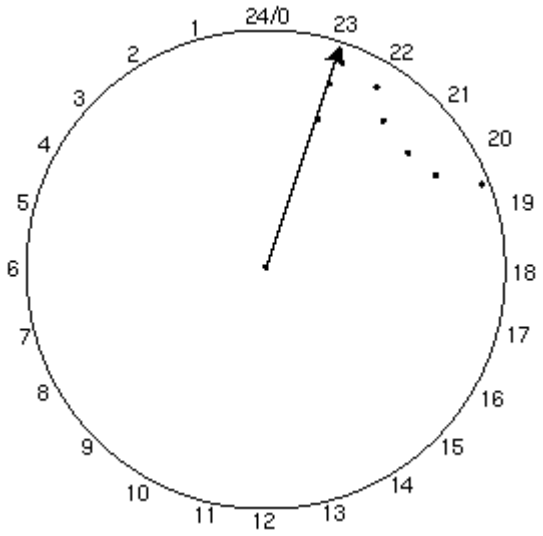
The Little Dipper is a dimmer constellation, and not all of its stars are visible from the city. The North Star and the last two stars of the bowl are usually visible. Note that the handle of the Little Dipper has the reverse curve of the handle of the Big Dipper.

TELLING TIME BY THE BIG DIPPER

The last two stars of the Dipper are the Pointers; a line through them passes close to the North Star.



Imagine that the North Star is the center of the clock, and an hour hand passes up to the Pointer stars. But this is a 24 hour clock, and the hour hand turns backwards! Midnight = Zero hours = twenty-four hours is at the top, 6 hours = 6 AM is on the left, 12 hours = noon is at the bottom, and 18 hours = 6 PM is on the right.

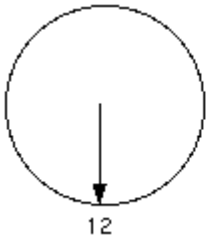


the position of the diagram above on the night of March 6, the time would be 23 hours, or 11 PM. Reading the Dipper Clock is the part that requires imagination.

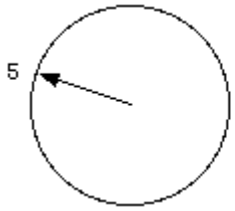
On any other night of the year, take the reading off the "Dipper Clock" and subtract two times the number of months after March 6 from the reading.

Time = Dipper Clock Reading - 2 X (number of months after March 6)

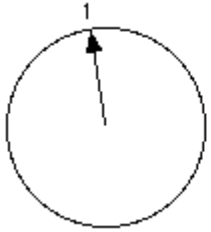
Multiplying by two and subtracting isn't so bad, but how do you figure out how many months your date is after March 6?? That's the hard part. Here are several examples:



Example 1: The Dipper clock reads 12 hours on August 8. Aug 8 is about 5 months after March 6. The time is therefore 12 - 2 X 5 = 2 hours = 2 AM



Example 2: The Dipper clock reads 5 hours on June 20. June 20 is about 3-1/2 months after March 6. The time is therefore 5 - 2 X 3-1/2 = - 2 hours = 2 hours before midnight = 10 PM



Example 3: The Dipper clock reads 1 hour on Jan 15. Jan 15 is about 10-1/4 months after March 6. The time is therefore 1 - 2 X 10-1/4 = - 19-1/2 hours = 19-1/2 hours before midnight = 4:30 AM. (To interpret "19-1/2 hours before midnight", subtract 19-1/2 from 24 hours.) Instead of considering Jan 15 to be 10-1/4 months *after* Mar 6, you could have considered it to be 1-3/4 months *before* Mar 6, and then *add* instead of subtract: 1 + 2 X 1-3/4 = 4-1/2 = 4:30 AM

This gives you an approximate local solar time, which might be up to an hour or so off the time zone time, depending on where you are in the time zone. To correct to Daylight Saving Time, add one hour to your final result.

Daylight Saving Time = Dipper Clock Reading - 2 X (number of months after March 6) + 1 hour

Banksy; "Fast Food Caveman" modified by The Woodsman's Journal Online